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| EXAMINER |
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ZHENG, EVA Y

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2611

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/773,072

Applicant(s)

TOLAND ET AL.

Examiner

Eva Yi Zheng

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities:

For the formality of the application under the present office practice, applicant(s) is required to replace "Claims" with "I or We Claim", "The Invention Claimed Is" (or the equivalent) before the Claims part of the specification of the instant applicant. See MPEP 608.01 (m).

Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 6 and 12 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claims 6 and 12 are directed to beam steering (Fig. 1) and frequency selection (Fig. 4), which are two different embodiments.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

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The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 6 and 12 are rejected under 35 U.S.C. 112, second paragraph, as failing to set forth the subject matter which applicant(s) regard as their invention. Evidence that claims 6 and 12 fail(s) to correspond in scope with that which applicant(s) regard as the invention. In the specification, applicant has stated "Instead of time reuse to identify particular pulses as being associated with particular users, the system may employ frequency reuse to separate the users", and this statement indicates that the invention is different from what is defined in the claim(s) because beam steering, time slot reuse and frequency reuse are different embodiments.

6. Claims 6 and 12 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 6 and 12 recite the limitation "the frequencies" in line 9. It is undefined and unclear of which frequency is refers to. Is it carrier frequency or available frequencies?

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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8. Claims 1-5 and 7-11 are rejected under 35 U.S.C. 102(b) as being unpatentable by Applicant Admitter Prior Art (AAPA) Newman et al (US 5,907,816).

a) Regarding to claim 1, Newman et al disclose for use in an ultra wideband (UWB) communication system (radio communication), apparatus capable of directing selected UWB pulses to and from selected multiple users, the apparatus comprising:

a wideband antenna structure having multiple arrays, each array having multiple antenna elements (20, 20a, 21-24 and 21a-24a in Fig. 1); and

means for separating UWB pulses into individual user streams of pulses and applying each user stream to the antenna structure in such a way as to generate individual user beams containing only pulses intended for those respective users (40 in Fig. 1; Col 5, L40-Col 6, L33).

b) Regarding to claim 2, Newman et al disclose apparatus as defined in claim 1, wherein: the means for separating UWB pulses into individual user streams comprises means for assigning to each user a particular allocation of UWB time slots (Fig.3 and Col 7, L38-Col 8, L14).

c) Regarding to claim 3, Newman et al disclose apparatus as defined in claim 1, wherein: the means for separating UWB pulses into individual user streams comprises means for applying each user stream to a different segment of the antenna (Fig. 1).

d) Regarding to claim 4, Newman et al disclose apparatus as defined in claim 1, wherein: the means for separating UWB pulses into individual user streams comprises means for assigning to each user a unique combination of a UWB frequency and an antenna array, whereby the UWB pulses transmitted to or from particular users are all

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uniquely identifiable and any user may receive or transmit UWB pulses at the same time as other users, without significant interference (Fig. 1; Col 4, L12-41).

e) Regarding to claim 5, Newman et al disclose apparatus as defined in claim 4, wherein the means for separating UWB pulses into user streams comprises:

a plurality of beam forming networks (10 in Fig. 1), each associated with a separate one of the multiple antenna arrays (20 and 20a), and each comprising a plurality of variable time delay circuits (27-31 and 27a-31a), wherein the time delay circuits interpose different sets of selected time delays for UWB pulses applied to the successive array elements, to direct different pulses along beam paths to respective users (Col 4, L63-Col 5, L18); and

means for generating beam steering signals to the beam forming networks (40), to switch the beam forming networks to effect beam steering toward selected users served by each antenna array (33-35 and 33a-35a).

f) Regarding to claim 7, Newman et al disclose a method for transmitting ultra wideband (UWB) pulses to selected multiple users (radio communication), comprising the steps of:

separating UWB pulses by individual user (16, 16a, 18 and 18a in Fig. 1); and
applying the UWB pulses to a wideband antenna structure having multiple arrays of multiple antenna elements (20, 20a, 21-24 and 21a-24a in Fig. 1).

g) Regarding to claim 8, Newman et al disclose a method as defined in claim 7, wherein:

the step of separating UWB pulses comprises assigning each allocation of time

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slots in a stream of UWB pulses (Fig.3 and Col 7, L38-Col 8, L14).

h) Regarding to claim 9, Newman et al disclose a method as defined in claim 7, wherein:

the step of separating UWB pulses comprises applying each user's pulses to a different segment of the antenna structure (Fig. 1).

l) Regarding to claim 10, Newman et al disclose a method as defined in claim 7, wherein:

the step of separating UWB pulses comprises assigning to each user a unique combination of a UWB frequency and an antenna array, whereby the UWB pulses transmitted to or from particular users are all uniquely identifiable and any user may receive or transmit UWB pulses at the same time as other users, without significant interference (Fig. 1; Col 4, L12-41).

J) Regarding to claim 11, Newman et al disclose a method as defined in claim 10, wherein:

the step of separating UWB pulses comprises forming beams in a plurality of beam forming networks (10 in Fig. 1), each associated with a separate one of the multiple antenna arrays (20 and 20a), wherein the step of forming beams includes interposing different sets of selected time delays for UWB pulses applied to the successive array elements, to direct different pulses along beam paths to respective users (Col 4, L63-Col 5, L18); and

the method further comprises generating beam steering signals to the beam

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forming networks (40), and thereby switching the beam forming networks to effect beam steering toward selected users served by each antenna array (33-35 and 33a-35a).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 6 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Newman et al (US 5,907,816) in view of Lakkis (US 2005/0207505).

Regarding to claims 6 and 12, Newman et al disclose switching the beam forming network functions to direct beams to a plurality (m) of users associated with each antenna array (33-35 and 33a-35a);

the antenna structure has n arrays, for a total of mn users (20 and 20a).

Newman et al failed to teach selecting frequency from available frequencies and reuse frequency. However, Lakkis disclose that in TDMA system, under a frequency reuse plan, available communication frequencies are allocated to communication cells within the communication system such that the same frequency will not be used in adjacent cells ([0007]). Therefore, it is obvious to one of ordinary skill in art to combine the frequency reuse plan of Lakkis in the antenna array radio communication system of Newman et al. By doing so, prevent interference from adjacent communication cells within a wireless communication system.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eva Y Zheng whose telephone number is 571-272-3049. The examiner can normally be reached on M-F, 7:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh Fan can be reached on 571-272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Eva Yi Zheng
Examiner
Art Unit 2611

April 20, 2007



CHIEH M. FAN
SUPERVISORY PATENT EXAMINER